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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Yukihito Furuhashi

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EXAMINER

SAXENA, AKASH

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/791,473	Applicant(s) FURUHASHI ET AL.	
	Examiner AKASH SAXENA	Art Unit 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,6 and 10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,6 and 10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claim(s) 1, 2, 6 and 10 has/have been presented for examination based on amendment filed on 29th November 2007.
2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 29th November 2007 has been entered.
3. Claim(s) 1, 2, 6 and 10 is/are amended.
4. Claim(s) 4 and 11 is/are newly cancelled.
5. Claim(s) 1, 2, 6, and 10 remain rejected under 35 USC § 102.
6. The arguments submitted by the applicant have been fully considered. Claims 1, 2, 6 and 10 remain rejected and this action is made NON-FINAL. The examiner's response is as follows.

Examiner's Withdrawals

7. Rejection under 35 USC § 101 to Claim(s) 10 is withdrawn in view of the amendment. Rejection for claim 11 is moot in view of cancellation of the claim.
8. Rejections under 35 USC § 112 ¶2nd to Claim(s) 1 & 4 are withdrawn in view of the amendment.

Claim Interpretation

9. Amended claim 1 discloses:

displaying a plurality of 3D models, the plurality of 3D models as a whole having a hierarchical structure;
specifying one 3D model of the hierarchical structure 3-D as a retrieval key by allowing a user to designate one of the plurality of 3D models sub elements displayed, the user being able to change to the level of the hierarchy to which the specification is made with a successive operation;

Each of the 3D models, as interpreted from specification (Specification: Fig.3 & 6), are complete objects them selves not parts of the 3D object. E.g. A chair and not one of the legs.

Claim Rejections - 35 USC § 102

(Argument 1) Applicant has argued in Remarks Pg.6:

Thus, Murao does not disclose or suggest the feature of a user freely selecting the level of a hierarchical structure that he/she wishes to employ as the search key. That is, Murao does not disclose "specifying one 3D model of the hierarchical structure as a retrieval key by allowing a user to designate one of the plurality of 3D model displayed, the user being able to change to the level of the hierarchy to which the specification is made with a successive operation". Accordingly, claims t and 10 patentably distinguish over Murao.

(Response 1) Examiner respectfully disagrees with the applicant for the following reason. Murao teaches in [0044]

[0044] The similarity calculator performs a comparison for a complete tree structure whereby a tree structure is found that fully corresponds to a tree structure in a predetermined three-dimensional shape model, which serves as a search key, and is ascertained to evidence a high similarity to the predetermined three-dimensional shape model, or performs a comparison for a sub-tree structure whereby the partial condition of a tree structure, which matches or is similar to a tree structure that serves as a search key [1], is ascertained to evidence a high similarity to the three-dimensional shape model.

Murao clearly teaches using a sub-tree as the search key. To illustrate specifically Murao matches sub-tree taught as sub-bounding tree which are correspondingly matched to other sub-bounding trees of the other objects from the database. See Murao [0154]-[0158].

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[0154] In this embodiment, the processing using the compound graph method will now be described.

[0155] FIG. 28 is a flowchart for explaining the best matching search process that can be performed by the similarity calculator 60. And FIGS. 29 to 31 are diagrams showing the processing for generating a compound graph using node lists wherein similarity edges are created, and for calculating the similarity.

[0156] In FIG. 28, first, the nodes of a compound graph that consists of sub-bounding trees belonging to the object A and the sub-bounding trees belonging to the object B are generated for the respective similarity edges (step 2801). Specifically, as shown in FIG. 29, the nodes for the compound graph are generated from pairs of sub-bounding trees in the objects A and B wherein similarity edges are created. At this time, since the restrictive condition 1 is set between the sub-trees A11 and A1, the restrictive condition 1 is inherited by all the nodes in the compound graph, including the sub-bounding trees A11 and A1.

Arguendo, even if the applicant's arguments that Murao teaches bounding tree to be used as the search key and not sub-tree from the lower hierarchy levels is considered, applicant's specification discloses using complete objects as the retrieval key even the lowest level of hierarchy (Specification: Fig.3 & 6). Therefore any level of hierarchy that is chosen (as claimed) would represent a complete object (e.g. pen) and would be equal to the bounding tree object as shown in the Murao: [0043], [0154]-[0158]. Murao teaches higher level of details of further decomposing the complete objects (Murao: Fig.3,4 and Fig.12-14) beyond applicant's specification and is an advancement from applicant's disclosure in the art of 3D object recognition. For at least the reasons above, each limitation (specifically selecting the retrieval key at any hierarchy as argued) is mapped and examiner finds applicant's argument unpersuasive.

(Argument 2 & Response 2) As for the comments related to the restrictive condition Murao [0124] states:

[0124] The restrictive condition addition unit 50 defines a geometrical restrictive condition and a topological restrictive condition (hereinafter collectively referred to simply as a restrictive condition) for performing a search for a desired solid/surface model in the database 80 in accordance with an instruction entered by a user. The defined restrictive condition is added to the bounding tree of a reference model that is generated by the bounding tree node generator 10, the neighbor graph generator 20 and the bounding tree generator 30, and the resultant bounding

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tree is used as a search key. When, depending on a search purpose, no restrictive condition is particularly required, the bounding tree of a reference model to which a restrictive condition has not been added is employed as a search key.

(Argument 3) Applicant has argued in Remarks Pg.6:

In paragraph [0044] pointed out by the Examiner, the element that is used as a search key is always "a tree structure", and there is no disclosure of "a sub-tree structure" being adopted as the search key.

(Response 3) Please see Response 1 above. Examiner finds applicant's arguments unpersuasive.

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Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claim 1, 2, 6, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Publication No. 2002/0004710 A1 by Takaaki Murao (Murao hereafter).

Regarding Claim 1 (Updated 3/13/08)

Murao teaches *a 3D model retrieval method for retrieving a 3D model similar to the specified 3D model from a plurality of 3D models stored in a database (Murao: [0024][0121]), the method comprising displaying a plurality of 3D models (Murao: Fig.12-13), the plurality of 3D models as a whole having a hierarchical structure (Murao: Fig. 14) as 3D model having a hierarchical structure; specifying one 3D model of the hierarchical structure as a retrieval key by allowing a user to designate one of the plurality of 3D models displayed (Murao: [0044]), the user being able to change to the level of the hierarchy to which the specification is made with a successive operation (Murao: [0044]-[0046]); acquiring the feature values of the 3D model specified as the retrieval key from the database (Murao: [0040][0046]); acquiring the feature values of 3D model stored in the database as objects to be retrieved (Murao: [0063] [0121]-[0130],[0067]-[0069] objects for each node); calculating the similarity between the 3D model specified as the retrieval key and*

3D model stored as objects to be retrieved in the database by evaluating the differences of the both of the acquired feature values (Murao: [0037]-[0041]); sorting the results of the calculation of the similarity (Murao: [0040] as selecting the most similar result involves determination for most similar therefore result sorting would be inherent); and displaying a 3D model retrieved based on the result of the sorting (Murao: [0167]-[0168]).

Regarding Claim 2

Murao teaches that *the hierarchical structure of the 3D model is a tree structure* (Murao: [0040].

Regarding Claim 6 (Updated 3/13/08)

Murao teaches that the 3D model has attribute information corresponding to each of the 3D models (Murao: [0069]-[0070], [0076], [0126]), and the displaying the 3D model includes displaying attribute information corresponding to the 3D model at the same time (Murao: [0168]-[0169]).

Regarding Claim 10 (Updated 3/13/08)

Murao teaches *a 3-D model retrieval system for retrieving a 3D model from a plurality of 3D models stored in a database by using various feature values calculated from the selected 3D model (Murao: Abstract; [0001]) comprising a computer system (Murao: [0056]-[0060])*. Further claim 10 discloses similar limitations as claim 1 and is rejected for the same reasons as claim 1.

Conclusion

11. All claims are rejected.

12. It is noted that any citation to specific, pages, columns, lines, or figures in the prior art references and any interpretation of the references should not be considered to be limiting in any way. A reference is relevant for all it contains and may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art. In re Heck, 699 F.2d 1331, 1332- 33,216 USPQ 1038, 1039 (Fed. Cir. 1983) (quoting In re Lemelson, 397 F.2d 1006,1009, 158 USPQ 275, 277 (CCPA 1968)).

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AKASH SAXENA whose telephone number is (571)272-8351. The examiner can normally be reached on 9:30 - 6:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini S. Shah can be reached on (571)272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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